



Arnold G

SEQUENCE LISTING

<110> AMRAD Operations Pty Ltd

<120> A NOVEL MAMMALIAN GENE, bcl-2, BELONGS TO THE bcl-2  
FAMILY OF APOPTOSIS-CONTROLLING GENES

<130> 2096584

<140> 09/155,327

<141> 1997-03-27

<150> PN8965

<151> 1996-03-27

<160> 15

<170> PatentIn Ver. 2.1

<210> 1

<211> 33

<212> DNA

<213> Mouse

<220>

<221> modified\_base

<222> 16

<223> n is inosine

<220>

<221> modified\_base

<222> 19

<223> n is inosine

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<222> 22

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<220>

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<222> 25

<223> n is inosine

<400> 1

gctctagaac tggggnhgmr tngtngcctt ytt

33

<210> 2

<211> 9

<212> PRT

<213> Mouse

<220>

<221> Unsure

<222> 5

<223> Xaa is Ile or Val

<400> 2

Asn Trp Gly Arg Xaa Val Ala Phe Phe  
1 5

<210> 3  
<211> 31  
<212> DNA  
<213> Mouse

<220>  
<221> modified\_base  
<222> 14  
<223> n is inosine

<220>  
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<222> 17  
<223> n is inosine

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<223> n is inosine

<400> 3  
ggaattccca gccnccntkn tcttgatcc a

31

<210> 4  
<211> 8  
<212> PRT  
<213> Mouse

<220>  
<221> Unsure  
<222> 4  
<223> Xaa is Asp or Glu

<220>  
<221> Unsure  
<222> 5  
<223> Xaa is Asn or Gln

<400> 4  
Trp Ile Gln Xaa Xaa Gly Gly Trp  
1 5

<210> 5  
<211> 14  
<212> PRT  
<213> Mouse

<400> 5  
Met Ala Thr Pro Ala Ser Thr Pro Asp Thr Arg Ala Leu Val  
1 5 10

<210> 6

<211> 583  
 <212> DNA  
 <213> HUMAN

<220>  
 <221> CDS  
 <222> (1)..(579)

<400> 6  
 atg gcg acc cca gcc tcg gcc cca gac aca cgg gct ctg gtg gca gac 48  
 Met Ala Thr Pro Ala Ser Ala Pro Asp Thr Arg Ala Leu Val Ala Asp  
 1 5 10 15  
 ttt gta ggt tat aag ctg agg cag aag ggt tat gtc tgt gga gct ggc 96  
 Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly  
 20 25 30  
 ccc ggg gag ggc cca gca gct gac ccg ctg cac caa gcc atg cgg gca 144  
 Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala  
 35 40 45  
 gct gga gat gag ttc gag acc cgc ttc cgg cgc acc ttc tct gat ctg 192  
 Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu  
 50 55 60  
 gcg gct cag ctg cat gtg acc cca ggc tca gcc cag caa cgc ttc acc 240  
 Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr  
 65 70 75 80  
 cag gtc tcc gac gaa ctt ttt caa ggg ggc ccc aac tgg ggc cgc ctt 288  
 Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu  
 85 90 95  
 gta gcc ttc ttt gtc ttt ggg gct gca ctg tgt gct gag agt gtc aac 336  
 Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn  
 100 105 110  
 aag gag atg gaa cca ctg gtg gga caa gtg cag gag tgg atg gtg gcc 384  
 Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Glu Trp Met Val Ala  
 115 120 125  
 tac ctg gag acg cgg ctg gct gac tgg atc cac agc agt ggg ggc tgg 432  
 Tyr Leu Glu Thr Arg Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp  
 130 135 140  
 gcg gag ttc aca gct cta tac ggg gac ggg gcc ctg gag gag gcg cgg 480  
 Ala Glu Phe Thr Ala Leu Tyr Gly Asp Gly Ala Leu Glu Glu Ala Arg  
 145 150 155 160  
 cgt ctg cgg gag ggg aac tgg gca tca gtg agg aca gtg ctg acg ggg 528  
 Arg Leu Arg Glu Gly Asn Trp Ala Ser Val Arg Thr Val Leu Thr Gly  
 165 170 175  
 gcc gtg gca ctg ggg gcc ctg gta act gta ggg gcc ttt ttt gct agc 576  
 Ala Val Ala Leu Gly Ala Leu Val Thr Val Gly Ala Phe Phe Ala Ser  
 180 185 190  
 aag tgaa 583  
 Lys

<210> 7

<211> 193  
 <212> PRT  
 <213> HUMAN

<400> 7  
 Met Ala Thr Pro Ala Ser Ala Pro Asp Thr Arg Ala Leu Val Ala Asp  
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 Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly  
                   20                  25                  30  
 Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala  
           35                  40                  45  
 Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu  
           50                  55                  60  
 Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr  
           65                  70                  75                  80  
 Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu  
                   85                  90                  95  
 Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn  
                   100                  105                  110  
 Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Glu Trp Met Val Ala  
           115                  120                  125  
 Tyr Leu Glu Thr Arg Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp  
           130                  135                  140  
 Ala Glu Phe Thr Ala Leu Tyr Gly Asp Gly Ala Leu Glu Glu Ala Arg  
           145                  150                  155                  160  
 Arg Leu Arg Glu Gly Asn Trp Ala Ser Val Arg Thr Val Leu Thr Gly  
                   165                  170                  175  
 Ala Val Ala Leu Gly Ala Leu Val Thr Val Gly Ala Phe Phe Ala Ser  
           180                  185                  190

Lys

<210> 8  
 <211> 582  
 <212> DNA  
 <213> Mouse

<220>  
 <221> CDS  
 <222> (1)..(579)

<400> 8  
 atg gcg acc cca gcc tca acc cca gac aca cgg gct cta gtg gct gac 48  
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           1                  5                  10                  15

ttt gta ggc tat agg ctg agg cag aag ggt tat gtc tgt gga gct ggc Phe Val Gly Tyr Arg Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly 20 25 30	96
cct ggg gaa ggc cca gcc gcc gac ccg ctg cac caa gcc atg cgg gct Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala 35 40 45	144
gct gga gac gag ttt gag acc cgt ttc cgc cgc acc ttc tct gac ctg Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu 50 55 60	192
gcc gct cag cta cac gtg acc cca ggc tca gcc cag caa cgc ttc acc Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr 65 70 75 80	240
cag gtt tcc gac gaa ctt ttc caa ggg ggc cct aac tgg ggc cgt ctt Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu 85 90 95	288
gtg gca ttc ttt gtc ttt ggg gct gcc ctg tgt gct gag agt gtc aac Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn 100 105 110	336
aaa gaa atg gag cct ttg gtg gga caa gtg cag gat tgg atg gtg gcc Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Asp Trp Met Val Ala 115 120 125	384
tac ctg gag aca cgt ctg gct gac tgg atc cac agc agt ggc ggc tgg Tyr Leu Glu Thr Arg Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp 130 135 140	432
gcg gag ttc aca gct cta tac ggg gac ggg gcc ctg gag gag gca cgg Ala Glu Phe Thr Ala Leu Tyr Gly Asp Gly Ala Leu Glu Glu Ala Arg 145 150 155 160	480
cgt ctg cgg gag ggg aac tgg gca tca gtg agg aca gtg ctg acg ggg Arg Leu Arg Glu Gly Asn Trp Ala Ser Val Arg Thr Val Leu Thr Gly 165 170 175	528
gcc gtg gca ctg ggg gcc ctg gta act gta ggg gcc ttt ttt gct agc Ala Val Ala Leu Gly Ala Leu Val Thr Val Gly Ala Phe Phe Ala Ser 180 185 190	576
aag tga Lys	582

<210> 9  
 <211> 193  
 <212> PRT  
 <213> Mouse

<400> 9  
 Met Ala Thr Pro Ala Ser Thr Pro Asp Thr Arg Ala Leu Val Ala Asp  
 1 5 10 15  
 Phe Val Gly Tyr Arg Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly  
 20 25 30  
 Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala

35 40 45  
 Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu  
 50 55 60  
 Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr  
 65 70 75 80  
 Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu  
 85 90 95  
 Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn  
 100 105 110  
 Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Asp Trp Met Val Ala  
 115 120 125  
 Tyr Leu Glu Thr Arg Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp  
 130 135 140  
 Ala Glu Phe Thr Ala Leu Tyr Gly Asp Gly Ala Leu Glu Glu Ala Arg  
 145 150 155 160  
 Arg Leu Arg Glu Gly Asn Trp Ala Ser Val Arg Thr Val Leu Thr Gly  
 165 170 175  
 Ala Val Ala Leu Gly Ala Leu Val Thr Val Gly Ala Phe Phe Ala Ser  
 180 185 190  
 Lys

<210> 10  
 <211> 333  
 <212> PRT  
 <213> murine

<400> 10  
 Met Ala Thr Pro Ala Ser Thr Pro Asp Thr Arg Ala Leu Val Ala Asp  
 1 5 10 15  
 Phe Val Gly Tyr Lys Leu Arg Gln Lys Gly Tyr Val Cys Gly Ala Gly  
 20 25 30  
 Pro Gly Glu Gly Pro Ala Ala Asp Pro Leu His Gln Ala Met Arg Ala  
 35 40 45  
 Ala Gly Asp Glu Phe Glu Thr Arg Phe Arg Arg Thr Phe Ser Asp Leu  
 50 55 60  
 Ala Ala Gln Leu His Val Thr Pro Gly Ser Ala Gln Gln Arg Phe Thr  
 65 70 75 80  
 Gln Val Ser Asp Glu Leu Phe Gln Gly Gly Pro Asn Trp Gly Arg Leu  
 85 90 95  
 Val Ala Phe Phe Val Phe Gly Ala Ala Leu Cys Ala Glu Ser Val Asn  
 100 105 110  
 Lys Glu Met Glu Pro Leu Val Gly Gln Val Gln Asp Trp Met Val Ala  
 115 120 125  
 Tyr Leu Glu Thr Arg Leu Ala Asp Trp Ile His Ser Ser Gly Gly Trp  
 130 135 140  
 Glu Leu Glu Ala Ile Lys Ala Arg Val Arg Glu Met Glu Glu Glu Ala  
 145 150 155 160  
 Glu Lys Leu Lys Glu Leu Gln Asn Glu Val Glu Lys Gln Met Asn Met  
 165 170 175

Ser Pro Pro Pro Gly Asn Ala Gly Pro Val Ile Met Ser Leu Glu Glu  
180 185 190

Lys Met Glu Ala Asp Ala Arg Ser Ile Tyr Val Gly Asn Val Asp Tyr  
195 200 205

Gly Ala Thr Ala Glu Glu Leu Glu Ala His Phe His Gly Cys Gly Ser  
210 215 220

Val Asn Arg Val Thr Ile Leu Cys Asp Lys Phe Ser Gly His Pro Lys  
225 230 235 240

Gly Phe Ala Tyr Ile Glu Phe Ser Asp Lys Glu Ser Val Arg Thr Ser  
245 250 255

Leu Ala Leu Asp Glu Ser Leu Phe Arg Gly Arg Gln Ile Lys Val Ile  
260 265 270

Pro Lys Arg Thr Asn Arg Pro Gly Ile Ser Thr Thr Asp Arg Gly Phe  
275 280 285

Pro Arg Ser Arg Tyr Arg Ala Arg Thr Thr Asn Tyr Asn Ser Ser Arg  
290 295 300

Ser Arg Phe Tyr Ser Gly Phe Asn Ser Arg Pro Arg Gly Arg Ile Tyr  
305 310 315 320

Arg Gly Arg Ala Arg Ala Thr Ser Trp Tyr Ser Pro Tyr  
325 330

<210> 11

<211> 239

<212> PRT

<213> Homo sapiens

<400> 11

Met Ala His Ala Gly Arg Thr Gly Tyr Asp Asn Arg Glu Ile Val Met  
1 5 10 15

Lys Tyr Ile His Tyr Lys Leu Ser Gln Arg Gly Tyr Glu Trp Asp Ala  
20 25 30

Gly Asp Val Gly Ala Ala Pro Pro Gly Ala Ala Pro Ala Pro Gly Ile  
35 40 45

Phe Ser Ser Gln Pro Gly His Thr Pro His Thr Ala Ala Ser Arg Asp  
50 55 60

Pro Val Ala Arg Thr Ser Pro Leu Gln Thr Pro Ala Ala Pro Gly Ala  
65 70 75 80

Ala Ala Gly Pro Ala Leu Ser Pro Val Pro Pro Val Val His Leu Thr  
85 90 95

Leu Arg Gln Ala Gly Asp Asp Phe Ser Arg Arg Tyr Arg Arg Asp Phe  
100 105 110

Ala Glu Met Ser Arg Gln Leu His Leu Thr Pro Phe Thr Ala Arg Gly  
115 120 125

Arg Phe Ala Thr Val Val Glu Glu Leu Phe Arg Asp Gly Val Asn Trp  
130 135 140

Gly Arg Ile Val Ala Phe Phe Glu Phe Gly Gly Val Met Cys Val Glu  
145 150 155 160

Ser Val Asn Arg Glu Met Ser Pro Leu Val Asp Asn Ile Ala Leu Trp  
165 170 175

Met Thr Glu Tyr Leu Asn Arg His Leu His Thr Trp Ile Gln Asp Asn  
180 185 190

Gly Gly Trp Asp Ala Phe Val Glu Leu Tyr Gly Pro Ser Met Arg Pro  
195 200 205

Leu Phe Asp Phe Ser Trp Leu Ser Leu Lys Thr Leu Leu Ser Leu Ala  
210 215 220

Leu Val Gly Ala Cys Ile Thr Leu Gly Ala Tyr Leu Gly His Lys  
225 230 235

<210> 12  
<211> 233  
<212> PRT  
<213> Homo sapiens

<400> 12  
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1 5 10 15

Leu Ser Gln Lys Gly Tyr Ser Trp Ser Gln Phe Ser Asp Val Glu Glu  
20 25 30

Asn Arg Thr Glu Ala Pro Glu Gly Thr Glu Ser Glu Met Glu Thr Pro  
35 40 45

Ser Ala Ile Asn Gly Asn Pro Ser Trp His Leu Ala Asp Ser Pro Ala  
50 55 60

Val Asn Gly Ala Thr Gly His Ser Ser Ser Leu Asp Ala Arg Glu Val  
65 70 75 80

Ile Pro Met Ala Ala Val Lys Gln Ala Leu Arg Glu Ala Gly Asp Glu  
85 90 95

Phe Glu Leu Arg Tyr Arg Arg Ala Phe Ser Asp Leu Thr Ser Gln Leu  
100 105 110

His Ile Thr Pro Gly Thr Ala Tyr Gln Ser Phe Glu Gln Val Val Asn  
115 120 125

Glu Leu Phe Arg Asp Gly Val Asn Trp Gly Arg Ile Val Ala Phe Phe  
130 135 140

Ser Phe Gly Gly Ala Leu Cys Val Glu Ser Val Asp Lys Glu Met Gln



145                      150                      155                      160  
 Val Leu Val Ser Arg Ile Ala Ala Trp Met Ala Thr Tyr Leu Asn Asp  
                                  165                      170                      175  
 His Leu Glu Pro Trp Ile Gln Glu Asn Gly Gly Trp Asp Thr Phe Val  
                                  180                      185                      190  
 Glu Leu Tyr Gly Asn Asn Ala Ala Ala Glu Ser Arg Lys Gly Gln Glu  
                                  195                      200                      205  
 Arg Phe Asn Arg Trp Phe Leu Thr Gly Met Thr Val Ala Gly Val Val  
                                  210                      215                      220  
 Leu Leu Gly Ser Leu Phe Ser Arg Lys  
 225                      230  
  
 <210> 13  
 <211> 211  
 <212> PRT  
 <213> Homo sapiens  
  
 <400> 13  
 Met Ala Ser Gly Gln Gly Pro Gly Pro Pro Arg Gln Glu Cys Gly Glu  
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 Pro Ala Leu Pro Ser Ala Ser Glu Glu Gln Val Ala Gln Asp Thr Glu  
                                  20                      25                      30  
 Glu Val Phe Arg Ser Tyr Val Phe Tyr Arg His Gln Gln Glu Gln Glu  
                                  35                      40                      45  
 Ala Glu Gly Val Ala Ala Pro Ala Asp Pro Glu Met Val Thr Leu Pro  
                                  50                      55                      60  
 Leu Gln Pro Ser Ser Thr Met Gly Gln Val Gly Arg Gln Leu Ala Ile  
                                  65                      70                      75                      80  
 Ile Gly Asp Asp Ile Asn Arg Arg Tyr Asp Ser Glu Phe Gln Thr Met  
                                  85                      90                      95  
 Leu Gln His Leu Gln Pro Thr Ala Glu Asn Ala Tyr Glu Tyr Phe Thr  
                                  100                      105                      110  
 Lys Ile Ala Thr Ser Leu Phe Glu Ser Gly Ile Asn Trp Gly Arg Val  
                                  115                      120                      125  
 Val Ala Leu Leu Gly Phe Gly Tyr Arg Leu Ala Leu His Val Tyr Gln  
                                  130                      135                      140  
 His Gly Leu Thr Gly Phe Leu Gly Gln Val Thr Arg Phe Val Val Asp  
                                  145                      150                      155                      160  
 Phe Met Leu His His Cys Ile Ala Arg Trp Ile Ala Gln Arg Gly Gly  
                                  165                      170                      175  
 Trp Val Ala Ala Leu Asn Leu Gly Asn Gly Pro Ile Leu Asn Val Leu  
                                  180                      185                      190

Val Val Leu Gly Val Val Leu Leu Gly Gln Phe Val Val Arg Arg Phe  
 195 200 205

Phe Lys Ser  
 210

<210> 14  
 <211> 192  
 <212> PRT  
 <213> Homo sapiens

<400> 14  
 Met Asp Gly Ser Gly Glu Gln Pro Arg Gly Gly Gly Pro Thr Ser Ser  
 1 5 10 15

Glu Gln Ile Met Lys Thr Gly Ala Leu Leu Leu Gln Gly Phe Ile Gln  
 20 25 30

Asp Arg Ala Gly Arg Met Gly Gly Glu Ala Pro Glu Leu Ala Leu Asp  
 35 40 45

Pro Val Pro Gln Asp Ala Ser Thr Lys Lys Leu Ser Glu Cys Leu Lys  
 50 55 60

Arg Ile Gly Asp Glu Leu Asp Ser Asn Met Glu Leu Gln Arg Met Ile  
 65 70 75 80

Ala Ala Val Asp Thr Asp Ser Pro Arg Glu Val Phe Phe Arg Val Ala  
 85 90 95

Ala Asp Met Phe Ser Asp Gly Asn Phe Asn Trp Gly Arg Val Val Ala  
 100 105 110

Leu Phe Tyr Phe Ala Ser Lys Leu Val Leu Lys Ala Leu Cys Thr Lys  
 115 120 125

Val Pro Glu Leu Ile Arg Thr Ile Met Gly Trp Thr Leu Asp Phe Leu  
 130 135 140

Arg Glu Arg Leu Leu Gly Trp Ile Gln Asp Gln Gly Gly Trp Asp Gly  
 145 150 155 160

Leu Leu Ser Tyr Phe Gly Thr Pro Thr Trp Gln Thr Val Thr Ile Phe  
 165 170 175

Val Ala Gly Val Leu Thr Ala Ser Leu Thr Ile Trp Lys Lys Met Gly  
 180 185 190

<210> 15  
 <211> 137  
 <212> PRT  
 <213> Homo sapiens

<400> 15

Asp	Ile	Glu	Gly	Phe	Val	Val	Asp	Tyr	Phe	Thr	His	Arg	Ile	Arg	Gln
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Asn	Gly	Met	Glu	Trp	His	Glu	Met	Met	Arg	Val	Met	Gly	Thr	Ile	Phe
		20						25					30		
Glu	Lys	Lys	His	Ala	Glu	Asn	Phe	Glu	Thr	Phe	Cys	Glu	Gln	Leu	Leu
		35					40					45			
Ala	Val	Pro	Arg	Ile	Ser	Phe	Ser	Leu	Tyr	Gln	Asp	Val	Val	Arg	Thr
	50					55					60				
Val	Gly	Asn	Ala	Gln	Thr	Asp	Gln	Cys	Pro	Met	Ser	Tyr	Gly	Arg	Leu
65					70					75					80
Ile	Gly	Leu	Ile	Ser	Phe	Gly	Gly	Phe	Val	Ala	Ala	Lys	Met	Met	Glu
				85					90					95	
Ser	Val	Glu	Leu	Gln	Gly	Gln	Val	Arg	Asn	Leu	Phe	Val	Tyr	Thr	Ser
			100					105					110		
Leu	Phe	Ile	Lys	Thr	Arg	Ile	Arg	Asn	Asn	Trp	Lys	Glu	His	Asn	Arg
		115					120					125			
Ser	Trp	Asp	Asp	Phe	Met	Thr	Leu	Gly							
	130					135									

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done*